

A Work Project, presented as part of the requirements for the Award of a Masters Degree in Management from the NOVA – School of Business and Economics.

**Packaging as a Vehicle of Nutritional Information for Children:
Enhancing Children's Perceptions of Healthy Food**

Ana Luísa Freixial Vasques, 884

A Project carried out on the Field Lab in Marketing - Children Consumer Behaviour,
under the supervision of:
Professor Luísa Agante

January 2013

INDEX

ABSTRACT	3
INTRODUCTION	4
LITERATURE REVIEW	4
THE IMPORTANCE OF PACKAGING	4
PACKAGING AS A VEHICLE OF NUTRITIONAL INFORMATION	5
TARGETING CHILDREN	7
HYPOTHESES	8
PERCEIVED HEALTHINESS.....	8
ATTENTION TO THE NUTRITION CLAIM.....	9
ATTITUDE TOWARD THE PRODUCT AND PURCHASE INTENTION.....	9
METHODOLOGY	11
LEGAL AND ETHICAL ISSUES	11
SAMPLE	11
RESEARCH DESIGN AND MATERIALS	12
PROCEDURE	15
MEASURES.....	15
RESULTS.....	17
PERCEIVED HEALTHINESS.....	17
ATTENTION TO THE NUTRITION CLAIM.....	18
ATTITUDE TOWARD THE PRODUCT AND PURCHASE INTENTION.....	19
OTHER RESULTS	22
DISCUSSION AND IMPLICATIONS.....	23
LIMITATIONS AND FUTURE RESEARCH	26
REFERENCES	27
APPENDICES	31
APPENDIX A: EXAMPLE OF A STIMULUS - VISUAL NUTRITION CLAIM AND GENERAL CLAIM ASSURING TASTINESS	31

Packaging as a Vehicle of Nutritional Information for Children: Enhancing Children's Perceptions of Healthy Food

ABSTRACT

This research explores on-package nutrition claims as a way to transmit nutritional information and to promote children's choice of healthy food. The influence of two formats of a nutrition claim - in verbal and visual form – and of a general claim assuring tastiness were analyzed on children and adults' *attention to the nutrition claim, attitude toward the product, perceived healthiness* and *purchase intention*. A sample of 233 children aged between 7 and 11 years and 194 adults completed structured questionnaires. Results suggest that nutrition claims influence children's perceptions but do not affect overall attitudes or behaviors. A visual nutrition claim grabs children's attention and increases the perceived tastiness and healthiness, a perception that a claim assuring tastiness distorts. Regarding adults, the nutrition claim in verbal form, with or without the general claim, has negative effects on the purchase intention. Managerial contributions and implications for policy are discussed.

Keywords – packaging, on-package nutrition claims, healthy eating, taste, children.

INTRODUCTION

Obesity more than doubled in the last three decades (WHO, 2012) and Europe was not an exception in this epidemic, which constitutes a special concern in what regards children (WHO, 2007). In fact, the childhood obesity prevalence registered an annual growth rate that is ten times greater than it was forty years ago (WHO, 2007). Lobstein and Dobb (2005) found an association between television advertising and overweight and thus considered that marketing to children contributed to the overweight prevalence. Therefore, the restriction of advertising of non-healthy food to children has been discussed (Garde, 2008). As a reaction, worldwide companies, as Nestlé and Unilever, are improving products' nutritional value without compromising taste (Nestlé, 2012; Unilever, 2012), and communicating these product characteristics through packaging. Few studies focused on packaging as a vehicle of nutritional information for children and as a way to promote healthier choices, particularly through nutrition claims¹. They were harmonized in the European Union to guarantee accurate information that does not mislead consumers (OJEU, 2007) and are incorporated in several children's products, namely in 64% of cereals packages (Harris et al., 2009).

LITERATURE REVIEW

THE IMPORTANCE OF PACKAGING

Packaging is important to protect the product - logistical function - but also to attract consumer's attention and to make the sale - marketing function (Kotler et al., 2005; Prendergast and Pitt, 1996). In fact, it has a crucial communication role at the moment consumers are considering buying the product, being a key influence to their purchase decisions, and therefore it is a differentiation factor from the competition (Prendergast

¹ Those that “states, suggests or implies that a food has particular beneficial nutritional properties” (OJEU, 2007: 8).

and Pitt, 1996; Silayoi and Speece, 2007). It influences quality perceptions and leads to the development of brand preferences (Silayoi and Speece, 2007).

Children make more purchases by themselves or with their parents and believe in what is printed on packages as they do with print advertising (McNeal, 1992). Nevertheless packages are not able to communicate with them at the point-of-purchase and McNeal (1992: 195) suggests that the “silent salesman” should be placed in their visual range and include words, symbols, colors, pictures and cues appropriated to this target, which would help them learning and memorizing a brand (Macklin, 1996; McNeal and Ji, 2003; McNeal, 1992; Sensbach, 2000). The front panel is the major attention-getting as it is frequently shown in advertising and includes the brand and licensed characters (McNeal and Ji, 2003). Children are attracted by the fun conveyed by the package and by its entertainment dimension (Pires and Agante, 2011; Sensbach, 2000).

PACKAGING AS A VEHICLE OF NUTRITIONAL INFORMATION

In the last decades, on-package nutritional information turned into a key issue. In the U.S., the Nutrition Labeling and Education Act (NLEA) of 1990 sharply increased the quantity of nutritional information that consumers may have access, particularly with the inclusion of the Nutrition Facts panel (Balasubramanian and Cole, 2002). In the European Union, the first directive regulating food labeling was introduced in 1979, which was further replaced in 2000 (Aisbitt, 2007). Nutritional labeling goal is “to help consumers choose more healthful foods” (Golan et al., 2001: 148). In 1990 it was made compulsory when a nutrition claim is on the package (OJEC, 1990), but it will be required in all products in 2016 (OJEU, 2011). Moreover, Regulation (EC) 1924/2006 required the compliance with established nutrient profiles by 2009 to embed claims on the packages (OJEU, 2007) but they have not been established yet (FSAI, 2012).

The regulation of food labeling drove researchers' interest. On one side, prior research shows that in the presence of on-package claims, consumers tend to rely solely on this information, reducing the search for the Nutrition Facts panel (Roe et al., 1999). Low-motivation consumers rely more on on-package claims, contrary to what happens with high-motivation ones (Balasubramanian and Cole, 2002). Research in Europe revealed that claims are useful to those consumers that do not examine nutrition labels (Stranieri et al., 2010) and prior studies showed those products to be preferred, promoting an increase in the purchase intention (Aschemann and Hamm, 2009; Aschemann-Witzel and Hamm, 2010; Kozup et al., 2003; Roe et al., 1999). Nevertheless, an opposed stream of research has shown that they do not usually have a positive impact on product evaluation and purchase intention as consumers prefer to trust on the Nutrition Facts panel when it is available (Garretson and Burton, 2000; Keller et al., 1997), including the low-motivation ones (Keller et al., 1997). Ford et al. (1996) showed that the search for nutrition labeling information was not affected by the presence of a claim. In fact, skepticism guides consumers to search for more detailed and accurate information instead of relying on claims (Szykman et al., 1997).

Concerning children, they have difficulties trying to understand nutrition labels and percentage of Recommended Daily Allowance (RDA) such that they do not use them when making choices (Lytle et al., 1997; Neeley and Petricone, 2006). Nevertheless, Miller et al. (2011) recently proposed that front-of-package claims could be a way to convey them nutritional information and they actually found that children were conscious and influenced by claims in an interesting way given that although choices were not significantly modified for nutrition and health claims, a general claim saying

“Cereal that’s good for you” led to a negative effect on children’s choices of healthy food due to the association between healthy food and inferior taste.

TARGETING CHILDREN

Children as consumers represent three markets in one: a primary market as they have money to satisfy their needs and wants; an influence market by making requests (direct) and having their preferences taken into account in purchase decisions (indirect); and a future market since they will become consumers of all kinds of goods and services (McNeal, 1992). Prior research about parent-child interaction in cereals selection showed that children play a role as direct influencers, making requests in 20% of times (Atkin, 1978), value that recently increased for 66% (Gaumer and Arnone, 2010). Furthermore, parents also start the interaction, encouraging children to choose a cereal brand (23% of times on Atkin (1978) or 18% on Gaumer and Arnone (2010)).

Our research is focused on concrete operational children within 7 to 11 years as they can think and relate multiple attributes in an abstract and functional manner when exposed to a stimulus (Piaget and Inhelder, 1972). At the analytical stage, the capacity to process information increases, so, they can better understand the marketplace and concepts as advertising and brands (John, 1999), being able to evaluate and compare products and information, also paying more attention to quality and details (Valkenburg and Cantor, 2001). Furthermore, at these ages, children rely on packages in their purchases and as they are a primary and influence market, more advertising at the point-of-purchase will be directed at them (McNeal, 2007). Therefore, children’s cognitive skills at this stage suggest that they are able to understand health and nutrition information on packaging (Miller et al., 2011), and thus, it is from this age segment that we can study the ability to communicate nutritional information directly to them in

order to encourage better choices. Moreover, these cued processors are able to use strategies for retaining and retrieving information, though, they usually need a stimulus to do so (Roedder, 1981). Finally, recent studies in Portugal found that children at this age have a fairly high nutrition knowledge, possibly because this topic is addressed early in Portuguese schools (Dias and Agante, 2011).

HYPOTHESES

PERCEIVED HEALTHINESS

Previous research revealed that children are aware that there are “good” and “bad” foods and of the distinction between healthy and unhealthy foods (Dias and Agante, 2011; Lytle et al., 1997). Miller et al. (2011) proposed that on-package claims could be a way to transmit nutritional information to children as it uses simple language and is present on the front panel, which makes it easier for them to access and comprehend. In fact, children showed to be aware of claims embedded on the packages and were also influenced by this information, particularly when it was present on a healthy cereal, which seemed to be due to the perception of healthfulness (Miller et al., 2011). Therefore, we propose that:

H1: The presence of a nutrition claim will have a positive effect on the children’s perceived healthiness of the product.

Studies with adults demonstrated that consumers frequently assign more healthiness to products when a claim is present on the package (Aschemann-Witzel and Hamm, 2010), leading to a positive “halo effect” (Ford et al., 1996: 25; Roe et al., 1999: 99), and oftentimes they go beyond the literal claims’ meaning (Harris et al., 2011), stimulating a “magic-bullet effect” by believing the product provides unsuitable benefits (Roe et al., 1999: 102). Thus, we expect that:

H2: The presence of a nutrition claim will have a positive effect on the adults' perceived healthiness of the product.

ATTENTION TO THE NUTRITION CLAIM

Previous research with children showed that they usually do not read and do not always understand extensive nutrition label information, and so, it is urgent to explore how packaging can transmit them nutritional information (Neeley and Petricone, 2006). One approach is to present this information in a more visual way (Neeley and Petricone, 2006) as children absorb information easier in visual than verbal form (McNeal and Ji, 2003). In fact, visuals can be a way of stressing product information and attract attention (John and Cole, 1986). Therefore, we propose that:

H3: Children's attention to the nutrition claim will be higher when a visual form is used rather than a verbal one.

Also with adults visual information is more vivid than verbal (Bone and France, 2001; Underwood and Klein, 2002; Underwood et al., 2001) and it catches more consumers' attention at the point of sale (Bone and France, 2001; Silayoi and Speece, 2007). Research with adults showed that pictures are assimilated before other elements presented in the package, especially in a low involvement situation (Bone and France, 2001; Silayoi and Speece, 2007). Therefore, we also expect that:

H4: Adults' attention to the nutrition claim will be higher when a visual form is used rather than a verbal one.

ATTITUDE TOWARD THE PRODUCT AND PURCHASE INTENTION

Prior research revealed that children hold a belief that healthy foods are not tasty, which leads them to choose an unhealthier product when they saw a claim on the package of healthy food (Miller et al., 2011). The authors concluded that children responded negatively to claims due to this association. However, a nutrition claim did not

significantly altered choices relative to the control situation (Miller et al., 2011), thus, we propose that:

H5: The presence of a nutrition claim will not have an effect on the children's attitude toward the product and purchase intention.

Unhealthy food is usually related to a pleasant taste and this association works in an unconscious way (Raghunathan et al., 2006). When doing research with children, Rossiter (1976) asked them to draw their favorite cereals, in which attributes such as sweetness were fairly present, contrary to what happened when the request was to draw a healthy cereal. Thus, Raghunathan et al. (2006) proposed that highlighting the health and taste characteristics in healthy products could counteract this association and increase the likelihood of choice. As taste is considered the major barrier to healthy eating (McKinley et al., 2005) and a decisive influence factor in children's food choices (McKinley et al., 2005; Miller et al., 2011; Pires and Agante, 2011), we propose that:

H6: Children's attitude toward the product and purchase intention will be higher when the nutrition claim is combined with a general claim assuring tastiness rather than when there is only the nutrition claim.

Prior research with children showed that the use of colors and visual cues, adapted to their cognitive development, help in the communication (Macklin, 1996; McNeal, 1992). In fact, to target these ages, as children are "visually-oriented", it is important to use visual elements and preferably those that transmit fun (Sensbach, 2000: 14). Moreover, research with adults revealed that an appealing package affects positively the attitude toward the product (Ghoshal et al., 2009). Moreover, Pires and Agante (2011) in their study with children showed that an appealing package results in a higher packaging evaluation and purchase intention, and affects the fun appeal item of the

attitude toward the product. Therefore, with the introduction of the visual form we expect the package to be more appealing, and thus, we propose that:

H7: Children's attitude toward the product and purchase intention will be higher when a visual form is used rather than a verbal one.

As mentioned before, regarding adults, there are two opposed streams of research, though, we will rely on the most recent. Contrary to children's literature, Kozup et al. (2003) demonstrated that positive nutritional information or claims presented on the package lead to more positive attitudes toward the product by adults. Moreover, when a positive on-package claim is made, the purchase intention increases (Aschemann and Hamm, 2009; Aschemann-Witzel and Hamm, 2010; Kozup et al., 2003; Roe et al., 1999), being claims made on packaging as much or more influential to purchase decisions than in television advertising (Brennan et al., 2008). We expect that:

H8: The presence of a nutrition claim will have a positive effect on the adults' attitude toward the product and purchase intention.

METHODOLOGY

LEGAL AND ETHICAL ISSUES

This study complies with the legal requirements by having the consent of the Portuguese Authority for Education (Appendix I), the consent from the schools where it was performed (Appendix II) and the parents' consent (Appendix III). All the ethics when doing research with children were respected, we assured data confidentiality and that the research purpose is in children's best interest (UNICEF, 2002).

SAMPLE

Children participants were 3rd to 6th graders from two public schools in a Lisbon's surrounding area. We received 233 authorizations out of the 296 that were distributed, representing a response rate of 79%. Children were equally distributed per grade (23%

3rd grade, 22% 4th grade, 26% 5th grade and 29% 6th grade), per gender (55% boys and 45% girls) and per stimuli (26% for the control group and 19%, 18%, 18% and 19% of subjects for each experimental group) (Appendix IV).

Adults participants were parents whose children were between 7 to 11 years and therefore of the same age as our children respondents. We had 194 valid responses, mostly from mothers (62%), which is usual on studies with children. Moreover, the control and experimental groups had 25%, 16%, 17%, 20% and 22% of respondents. Our adult respondents had the same mean age as our children's parents (41 and 40 years, respectively), but their sample was more biased towards higher education (77% of the adult subjects and 35% of the children's parents had higher education), although both datasets were biased when compared with the average Portuguese population – only 13% of the population had frequented university in 2011 (PORDATA, 2012). Both samples showed concern with the nutritional information present in children's products and in breakfast cereals (means of 4,11 - 4,04 for the adult respondents and 3,55 - 3,60 for children's parents, respectively). A t-test for independent samples showed that, in both cases, the adult respondents' means were significantly higher than the children's parents ones with $p=0,000$, maybe due to the bias on education (Appendix V).

RESEARCH DESIGN AND MATERIALS

To collect the data, we used structured questionnaires with children as they are an adequate instrument to disclose their attitudes and perceptions (Greig et al., 2007) and can reduce method bias, as we guaranteed that the questionnaires were anonymous and that there were no right or wrong answers (Podsakoff et al., 2003). We used 5-point scales with smiley faces as children have difficulties in differentiating more levels (Greig et al., 2007; McNeal, 1992). We also wanted to test the same stimuli and

variables in adults given that developing children's products without parents support is a fatal mistake (McNeal, 1992). Thus, we used online structured questionnaires as it allows collecting a greater amount of data (Lefever et al., 2007). Although our first idea was to target the corresponding children's parents, it could lead the child to have access to the stimulus before the experiment, thus, could bias and compromise children's data. In our stimulus, we used breakfast cereals since children usually play a role in its selection (Atkin, 1978; Gaumer and Arnone, 2010), so, it is familiar to them (Miller et al., 2011). When doing research with children, we used 7,5×11 inches laminated colored cards with the cereal front panel (Levin and Levin, 2010; Miller et al., 2011) in which we added a nutrition claim - "Contains Calcium and Vitamin C". The choice of this claim was discussed and agreed both by a nutritionist² and a psychologist³, given this is the expression stated in the legislation (Regulation (EC) 1924/2006) that is easier for children to understand and the nutrients selected are usually known by them. We included only two nutrients given that prior to the end of the primary school, children's memory cannot be compared to adults (Greig et al., 2007), and according to the psychologist, this is an adequate number of words for them to recognize. Moreover, we complied with the Commission Directive 2008/100/EC (OJEU, 2008), by taking into account the real nutritional properties of the cereal used (Appendix VI and VII). To these stimuli we combined a general claim stating that the product has a given attribute (OJEU, 2007), in this case, a "delicious taste". Then, we contacted a teacher of Visual Arts⁴ that gave us important inputs about the colors and the visual form to be used in the prototypes. The use of the rocket with its track as the visual form was considered to be

² Graduated in Nutrition Sciences and with experience in working in companies with nutrition claims on packaging

³ Graduated in Clinical and Accompaniment Psychology with post-graduation in Psychological Intervention in School Context

⁴ Graduated in Communication Design and teacher in a Secondary School

appropriate as it is a playful element that induces dynamism, movement, is visually attractive to children, expressing also the idea that eating those cereals (given that rockets are also included into the cereals) bring benefits for their health.

Previous to the main experiment, we developed two pre-tests. The first was applied to six children to choose a breakfast cereal that rated similar in terms of children's preference and awareness/familiarity to be used in the main experiment (Levin and Levin, 2010; Miller et al., 2011). First we talked with the nutritionist to select the healthier children's breakfast cereals of the two leading manufacturers in Portugal, Nestlé and Kellogg's (AC Nielsen, 2009). Thus, we asked children to rate on how frequently they ate each cereal and how much they like to eat it (Miller et al., 2011), using a 5-point scale (Appendix VIII). Results showed that *Estrelitas* by Nestlé was the cereal that all children knew and that rated similar in frequency of consumption ($\bar{x}=3,50$; $sd=1,05$) and in preference ($\bar{x}=3,67$; $sd=0,82$) (Appendix IX). We obtained Nestlé authorization to use their images, and the company provided the brand elements and the requirements it follows when developing products' packaging. We respected these guidelines to guarantee that the stimuli would be as close to a real packaging as possible (Appendix A depicts one example of the stimulus used). A second pre-test was conducted to test the final questionnaire, prototypes, and the stimuli realism through a 5-point scale (adapted from Miller et al., 2011), which was also accessed in the main experiment, achieving means consistently high for all groups ($\bar{x}_C = 4,13$; $\bar{x}_{Ve} = 4,30$; $\bar{x}_{Ve+GC} = 4,59$; $\bar{x}_{Vi} = 4,41$; $\bar{x}_{Vi+GC} = 4,27$)⁵ (Appendix X).

Concerning adults, the same stimuli were randomly incorporated in each online questionnaire (Appendix XI, XII, XIII, XIV and XV) that did not allow going back in

⁵ C = Control Group; Ve = Verbal Nutrition Claim; Ve + GC = Verbal Nutrition Claim and General Claim assuring tastiness; Vi = Visual Nutrition Claim; Vi + GC = Visual Nutrition Claim and General Claim assuring tastiness.

the questions in order to assure the reliability of the results, particularly regarding the attention to the nutrition claim variable.

PROCEDURE

Firstly, we randomly divided each class in four groups to guarantee homogeneity. Then, a card corresponding to a stimulus was randomly delivered to each student (Appendix XVI, XVII, XVIII and XIX) and the task given was to observe it as they would look at a package on the supermarket (Miller et al., 2011), without time constraints (Pires and Agante, 2011). After collecting the stimuli, we clarified the procedure and read the questions aloud and then, children were asked to fill the questionnaire (Appendix XX). As the questionnaire of the control group was different (Appendix XXI), we could not do them all in the same class without raising suspicion, so we had one more class in each grade corresponding to the Control stimulus (Appendix XXII).

MEASURES

Previous studies were reviewed in order to include the appropriate measures in the questionnaire for each target. Concerning children, some questions were adapted given that the ages considered in this study were lower than those from the original articles, and for that, we had the help of a psychologist.

Perceived healthiness was measured as in the study of Dixon et al. (2007) and Pires and Agante (2011) with children by asking how healthy they think it was to eat that food, using a 5-point scale (1-“very unhealthy” and 5-“very healthy”). We also asked adults how healthy the product was, in their opinion, through a 5-point scale (1-“not healthy at all” and 5-“very healthy”) (Feunekes et al., 2008).

To measure the attention to the nutrition claim, as we are targeting cued processor children, we did not use a recall question given that they need a stimulus to retrieve information (Roedder, 1981). Similarly to what Macklin (1994) did when studying the

influence of a brand character as a retrieval cue in advertising with children, we showed a front panel image where only the nutrition and general claim were drawn. Thereby, we told children that it was the cereal box they had seen previously (Macklin, 1994) but where something was missing (the place was signaled). We formulated the recognition question similarly to what Gorn and Golberg (1980) did in their study by presenting six alternative nutrients from which they had to choose the two they had seen on the package. As children in the pre-test did not know what a “nutrition claim” or a “nutrient” was, we used the word “ingredient” in their questionnaire. Then, we coded a wrong nutrient as 0 and a right one as 1 and summed each child’s answers. The same question and coding procedure was used for adults.

Attitude toward the product was measured by requesting children to evaluate the food as “unfamiliar-familiar”, “boring-fun” and “tastes bad-tastes good” using a 5-point scale, an adaptation made by Pires and Agante (2011) of Dixon et al. (2007) scale ($\alpha=0,72-0,85$). Regarding adults we had to use another scale since the children’s items were not suitable to be used with adults. Therefore we used the items “unfavourable-favourable”, “bad-good” and “negative-positive” ($\alpha=0,98$), whose item average was used in the analysis (Garretson and Burton, 2000; Keller et al., 1997; Kozup et al., 2003) and we also included the perceived tastiness question. We used a 5-point scale with adults, instead of a 7-point scale, to maintain congruency and to possibly compare adults with children’s results.

To measure the purchase intention, we asked children if they would like to buy or ask parents to buy the breakfast cereals used in the stimuli (Phelps and Hoy, 1996), if they would like to eat that product (adapted from Pires and Agante, 2011) and also asked them to compare how much of those cereals they would like to eat in the next month

relative to what they consumed at that moment (adapted from Dixon et al., 2007), through 5-point scales. Concerning adults, we used measures stated in adults' research but we needed to adapt some questions to the fact that we are considering a product for their children and not for themselves. Thus, we asked them: the likelihood of purchase the product given the information presented on the front of the package (1-“very unlikely” to 5-“very likely”); the probability of considering buying the product given the information showed if they wanted to buy a cereal for their child (1-“not probable” to 5-“very probable”); and the increase/decrease in the likelihood of purchasing that product taken into account the information exhibited, assuming they were interested in buying a product from the same category for their child (1-“less likely” to 5-“more likely”) ($\alpha=0,89$) (Garretson and Burton, 2000; Keller et al., 1997; Kozup et al., 2003). We used a 5-point scale for the consistency and comparison reasons mentioned above. The three-item average was computed and used in the analyses both for adults (Garretson and Burton, 2000; Keller et al., 1997; Kozup et al., 2003) and for children.

RESULTS

PERCEIVED HEALTHINESS

Hypothesis 1 states that in the presence of a nutrition claim, children will judge the product as being healthier than in the control group. In fact, we got a mean score of 3,97 for the control group while the Verbal and Visual Nutrition Claim stimuli registered 4,39 and 4,37, respectively. A t-test for independent samples was performed and for both cases the means differences between each experimental group and the control group were significant ($p=0,024$ and $p=0,042$), therefore **H1 is not rejected**. When we added the general claim assuring tastiness to the nutrition claim, we observed that the means decreased relatively to the control group, having a score of 3,80 and 3,82, respectively for the Verbal and the Visual Nutrition Claim. Furthermore, neither of

these differences relative to the control group were significant ($p=0,481$ and $p=0,503$, respectively), which leads to the **rejection of H1 when the general claim is present** (Appendix XXIII). Moreover, the differences were statistically significant when comparing with the respective experimental groups (Verbal Nutrition and General Claims vs. Verbal Nutrition Claim: $p=0,012$; Visual Nutrition and General Claims vs. Visual Nutrition Claim: $p=0,013$), suggesting an adverse effect of the general claim as it “nullified” the healthiness gains conquered with the nutrition claim (Appendix XXIV). Hypothesis 2 proposes the same effect on the perceived healthiness for adults. In this case, the mean scores were lower for all experimental groups when compared with the control group, contrary to our expectations ($\bar{x}_C = 2,98$; $\bar{x}_{Ve} = 2,43$; $\bar{x}_{Ve+GC} = 2,72$; $\bar{x}_{Vi} = 2,85$; $\bar{x}_{Vi+GC} = 2,75$). However, the difference was only significant in the case of the Verbal Nutrition Claim ($p=0,010$) (Appendix XXV). These results lead us to **reject H2** and to the conclusion that claims do not affect perceived healthiness of adults and may decrease it. Another significant result we found, when analyzing our data, was that adults perceived the product’s healthfulness to be significantly higher when a Visual Nutrition Claim alone was used rather than a Verbal one ($p=0,025$) (Appendix XXVI).

ATTENTION TO THE NUTRITION CLAIM

H3 and H4 propose the attention to the nutrition claim to be higher when it is in visual form rather than in verbal form both for children and adults. Regarding children, the mean scores were superior for the visual forms and t-tests for independent samples⁶ confirmed the significance of these differences ($\bar{x}_{Vi} = 1,66$ and $\bar{x}_{Ve} = 1,36$, $p=0,035$; $\bar{x}_{Vi+GC} = 1,60$ and $\bar{x}_{Ve+GC} = 1,32$, $p=0,030$) (Appendix XXVII). Therefore, there is evidence to **not reject H3**. Concerning adults, the same conclusion was verified, with

⁶ We performed t-tests for independent samples but it is important to take into account the fact that the scale is short (0-2), which can impose some limitations.

the visual forms registering significantly higher mean scores than the verbal ones ($\bar{x}_{Vi} = 1,45$ and $\bar{x}_{Ve} = 1,10$, $p=0,040$; $\bar{x}_{Vi+GC} = 1,32$ and $\bar{x}_{Ve+GC} = 0,97$, $p=0,041$), which leads us to **not reject H4** (Appendix XXVIII). Moreover, we noticed that the mean scores for attention were higher on all groups for children when compared to adults, which was confirmed by a t-test for independent samples considering all stimuli with $p=0,001$ ($\bar{x}_{Children} = 1,49$ and $\bar{x}_{Adults} = 1,23$) (Appendix XXIX).

ATTITUDE TOWARD THE PRODUCT AND PURCHASE INTENTION

Hypothesis 5 proposes that children's attitude toward the product and purchase intention will not change in the presence of a nutrition claim relative to the control group. The attitude toward the product scale alpha of 0,520 is in line with Pires and Agante (2011) reliability value (alpha=0,502) and the purchase intention alpha of 0,896 confirmed its reliability. Table 1 presents the variables' averages for all groups and the p-values of the independent sample t-tests comparing with the control group. All differences were not significant at 5%, although at 10%, the attitude toward the product of the Verbal Nutrition and General Claims would be significantly higher than the control group ($p=0,069$). Therefore **H5 is not rejected**. We also looked at each item of the attitude ("unfamiliar-familiar", "boring-fun", "tastes bad-tastes good"), and concluded that the only significant differences were for the perceived tastiness of two stimuli, the Verbal

Table 1: Children's overall attitude toward the product and purchase intention

Stimulus	Attitude toward the Product	Purchase Intention
Control Group	4,23	3,69
Verbal Nutrition Claim	4,44 ($p=0,186$)	3,92 ($p=0,346$)
Verbal Nutrition and General Claims	4,49 ($p=0,069$)	3,89 ($p=0,366$)
Visual Nutrition Claim	4,45 ($p=0,136$)	4,02 ($p=0,133$)
Visual Nutrition and General Claims	4,37 ($p=0,351$)	3,59 ($p=0,650$)

Nutrition and General Claims ($\bar{x}_{Ve+GC} = 4,76$ and $\bar{x}_C = 4,18$, $p=0,004$), and the Visual Nutrition Claim ($\bar{x}_{Vi} = 4,71$ and $\bar{x}_C = 4,18$, $p=0,010$)⁷ (Appendix XXX).

⁷ When we analyzed each item of the purchase intention we acknowledge that those same stimuli had a difference regarding the willingness to consume the product ($\bar{x}_{Ve+GC} = 4,27$ and $\bar{x}_C = 3,77$, $p=0,032$; $\bar{x}_{Vi} = 4,22$ and $\bar{x}_C = 3,77$, $p=0,051$).

Hypothesis 6 states that children's attitude toward the product and purchase intention will be higher when the general claim assuring tastiness is present relative to when there is only the nutrition claim due to the attempt to counteract the healthy-not tasty association. We started by analyzing if the same effect healthiness-tastiness existed, and obtained a correlation coefficient of 0,122 between perceived healthiness and tastiness, which was significant at a 10% level ($p=0,062$), thus, indicating there is a positive but low correlation on this children's sample, contrary to what was expected. Afterwards, analyzing the attitude toward the product, no significant differences were found as it is shown in Table 2. We analyzed separately

Table 2: Children's overall attitude toward the product and purchase intention – the general claim assuring tastiness

Stimulus	Attitude toward the Product	Purchase Intention
Verbal Nutrition and General Claims	4,49 ($p=0,713$)	3,89 ($p=0,888$)
Verbal Nutrition Claim	4,44	3,92
Visual Nutrition and General Claims	4,37 ($p=0,544$)	3,59 ($p=0,046$)
Visual Nutrition Claim	4,45	4,02

each item and no significant mean differences were proved at 5%, though at 10% the perceived tastiness of the Visual Nutrition Claim would be higher than when the general claim was added ($\bar{x}_{Vi+GC} = 4,38$ and $\bar{x}_{Vi} = 4,71$, $p=0,089$). Regarding the purchase intention, the only statistically significant results were for the stimuli in visual forms, but in the opposite direction we expected ($p=0,046$) (Appendix XXXI). These results lead us to **reject H6**.

Hypothesis 7 proposes that children's attitude toward the product and purchase intention will be higher when the nutrition claim is in visual form rather than when it is in verbal form. Looking for each item of the attitude

Table 3: Children's overall attitude toward the product and purchase intention - the visual form

Stimulus	Attitude toward the Product	Purchase Intention
Visual Nutrition Claim	4,45 ($p=0,954$)	4,02 ($p=0,612$)
Verbal Nutrition Claim	4,44	3,92
Visual Nutrition and General Claims	4,37 ($p=0,338$)	3,59 ($p=0,178$)
Verbal Nutrition and General Claims	4,49	3,89

toward the product, the only significant difference we found was in the perceived tastiness, in favor of the Verbal Nutrition and General Claims stimulus ($\bar{x}_{Vi+GC} = 4,38$ and $\bar{x}_{Ve+GC} = 4,76$, $p=0,043$), thus, as presented in Table 3, the overall attitude toward the product did not register significant

differences as well as the purchase intention (Appendix XXXII). Therefore, there is evidence to **reject H7**.

Hypothesis 8 proposes that adults' attitude toward the product and purchase intention

will be positively affected by the

presence of a nutrition claim. Both

variables registered alphas similar to the

original scales (attitude alpha of 0,964,

aligned with the 0,98 of the original scale, and purchase intention alpha of 0,936 which

compares with the original of 0,89). Table 4 presents all the p-values of the t-tests for

independent samples conducted, comparing each experimental group with the control

group for each variable. Results showed that only the purchase intention variable had

statistically significant differences for both stimuli using the verbal form of the nutrition

claim, but in the opposite direction we expected ($p=0,020$; $p=0,046$, respectively).

Regarding the perceived tastiness, all experimental groups' means were higher than the

control group, with the exception of the Verbal Nutrition Claim stimulus, which

represents the only statistically significant difference to the control situation ($p=0,044$)

(Appendix XXXIII). These findings lead us to **reject H8**.

Moreover, we also compared the stimuli where the general claim assuring tastiness was

added with the respective nutrition claim

alone. Concerning the adults' attitude

toward the product and purchase

intention, as shown in Table 5, no

statistically significant differences were proved. We only registered a significant

difference on the perceived tastiness of the Verbal Nutrition and General Claims when

Table 4: Adults' attitude toward the product, purchase intention and perceived tastiness

Stimulus	Attitude toward the Product	Purchase Intention	Perceived Tastiness
Control Group	3,38	3,26	3,46
Verbal Nutrition Claim	3,08 ($p=0,157$)	2,59 ($p=0,020$)	3,03 ($p=0,044$)
Verbal Nutrition and General Claims	3,21 ($p=0,334$)	2,71 ($p=0,046$)	3,53 ($p=0,762$)
Visual Nutrition Claim	3,31 ($p=0,695$)	3,48 ($p=0,405$)	3,63 ($p=0,442$)
Visual Nutrition and General Claims	3,24 ($p=0,455$)	3,24 ($p=0,927$)	3,57 ($p=0,605$)

Table 5: Adults' attitude toward the product, purchase intention and perceived tastiness - the general claim assuring tastiness

Stimulus	Attitude toward the Product	Purchase Intention	Perceived Tastiness
Verbal Nutrition and General Claims	3,21 ($p=0,520$)	2,71 ($p=0,677$)	3,53 ($p=0,047$)
Verbal Nutrition Claim	3,08	2,59	3,03
Visual Nutrition and General Claims	3,24 ($p=0,720$)	3,24 ($p=0,322$)	3,57 ($p=0,798$)
Visual Nutrition Claim	3,31	3,48	3,63

compared with the Verbal Nutrition Claim alone ($p=0,047$), suggesting that the general claim increased the perceived tastiness of the product (Appendix XXXIV).

We also explored if the visual component affected our variables in the adults' sample and thus compared each pair visual versus verbal stimulus. Concerning the attitude toward the product, no statistically significant differences were proved to exist as shown in Table 6. As for the purchase intention,

Table 6: Adults' attitude toward the product, purchase intention and perceived tastiness - the visual form

Stimulus	Attitude toward the Product	Purchase Intention	Perceived Tastiness
Visual Nutrition Claim	3,31 ($p=0,269$)	3,48 ($p=0,003$)	3,63 ($p=0,010$)
Verbal Nutrition Claim	3,08	2,59	3,03
Visual Nutrition and General Claims	3,24 ($p=0,853$)	3,24 ($p=0,035$)	3,57 ($p=0,881$)
Verbal Nutrition and General Claims	3,21	2,71	3,53

the visual forms registered both a statistically significant higher means than any stimuli in verbal form ($p=0,003$

and $p=0,035$; Visual Nutrition Claim vs. Verbal Nutrition and General Claims: $p=0,006$; Visual Nutrition and General Claims vs. Verbal Nutrition Claim: $p=0,014$). Regarding the perceived tastiness, the Visual Nutrition Claim registered a mean significantly higher than the Verbal Nutrition Claim ($p=0,010$). (Appendix XXXV). Finally, another noticeable result is the existence of a medium strength positive correlation between perceived healthiness and tastiness ($r_p=0,470$, $p=0,000$) (Appendix XXXVI).

OTHER RESULTS

As the cereal brand used is well-established in the market, we tested a possible association between its consumption frequency and our variables. We divided the sample in light consumers (those who never consume the product or in very few times) and heavy (those who consume it at least once a week). An association between children's frequency of consumption and perceived healthiness was found ($\chi^2=18,887$, $p=0,001$) as well as with the purchase intention ($G=21,456$, $p=0,044$), and the descriptive statistics showed that heavy consumers tend to perceive the product as being healthier and have also a higher purchase intention. Regarding adults, we tested the

association between their children's frequency of consumption and the adults' attention to the nutrition claim ($\chi^2=10,183$, $p=0,006$), perceived healthiness ($\chi^2=21,309$, $p=0,000$), perceived tastiness ($\chi^2=23,376$, $p=0,000$), attitude toward the product ($G=36,404$, $p=0,000$) and purchase intention ($G=90,981$, $p=0,000$). Therefore, parents of children who consume the cereal more frequently give more attention to the nutrition claim, perceive the product as being healthier and tastier and have a higher attitude toward the product and purchase intention (Appendix XXXVII).

DISCUSSION AND IMPLICATIONS

The aim of this research was to explore packaging as a way to transmit nutritional information to children through nutrition claims, and possibly to encourage healthier food choices. The effects on adults were also analyzed to control for their reaction to these on-package communications targeting children.⁸

Firstly, to draw children and adults' attention to the nutrition claims, results suggest that the visual form is more effective, which is aligned with our expectations. Our study revealed that the nutrition claim was able to influence children's perceptions, however, it was not able to impact overall attitudinal and behavioral variables. Thus, marketers should be aware that children do not seem to know how to use claims in order to make choices. Furthermore, the general claim assuring tastiness had an adverse effect on the perceived healthiness, and also on the perceived tastiness when using visual nutrition claims. This can be due to the relevance we are giving to the product in the visual form developed, given that the rocket cereal is a product component, which proved additional information to be unnecessary. The fact that no significant positive effects were proved to exist on the attitude toward the product and purchase intention when we added the

⁸ The summary table with the conclusions of all hypotheses is available in Appendix XXXVIII.

general claim goes against Raghunathan et al. (2006) suggestion, which can be due to the inexistence of a negative correlation between healthfulness and tastiness in our research both for adults and children, contradicting also Miller et al. (2011) proposal. Moreover, even the appealing factor of the visual form was not able to positively affect children's overall attitude toward the product and purchase intention when compared with verbal forms. This is possibly due to the fact that this package is already engaging and has other relevant visual elements, such as the cartoon, that are targeting children.

In what regards adults, the nutrition claim in verbal form with or without the general claim assuring tastiness, often used in the marketplace, proved to reduce significantly the purchase intention while the visual forms did not register significant differences regarding the control situation. This result and the fact that no significant positive effects were found on the attitude toward the product contradict our hypotheses, thus, the more recent research, and instead they are closer to the results from Garretson and Burton (2000) and Keller et al. (1997). Furthermore, both visual forms have a higher purchase intention relative to any stimuli in verbal form which can be due to the parents' knowledge that children are attracted by the fun the package conveys (Pires and Agante, 2011; Sensbach, 2000), which leads the visual forms to be preferred in an attempt to please their children. Moreover, the use of nutrition claims did not prove to significantly influence adults' perceived tastiness and healthiness of the product, with the exception of the verbal nutrition claim that registered a significant decrease, which can be due to adults' skepticism relative to this information (Szykman et al., 1997).

Thereby, this study comprises managerial contributions. It proposes that on-package nutritional messages can improve the healthfulness a product transmits to children and that the general claim assuring tastiness distorts this message. Thus, if the marketers'

goal is to convey a healthy brand image from a healthier product among children, it can be achieved through the nutrition claim alone, both in verbal or visual form. However, if the strategy driver is to convey a message of a tasty product, it can be attained through the verbal nutrition claim combined with the claim assuring tastiness or with the visual nutrition claim alone. Moreover, if we combine both goals, we conclude that the nutrition claim in visual form alone can be a way to grab children's attention at the same time that increases the product's perceived healthiness and tastiness. Furthermore, although it did not significantly impact the overall purchase intention, the willingness to consume was higher than in the control situation. Taking into account adults' results, careful should be taken when incorporating nutritional messages in verbal form on the packages as it showed to decrease the purchase intention, and also the perceived healthiness and tastiness in the case of the verbal form alone. As both stimuli in visual form proved to have a higher purchase intention than any stimuli in verbal form (and the visual nutrition claim alone had a higher perceived healthiness and tastiness than the corresponding verbal form), they are an alternative to be considered. As most companies have a dual-targeting goal, combining the previous results, the nutrition claim in visual form alone seems to be the most appropriate. Though, depending on the goal, different actions may be taken when introducing these messages on packages.

Our results have implications for policy that are important to state. Firstly, as we proved that nutrition claims influence children's perceptions, particularly of products' healthiness, the authorities responsible for developing legislation in nutritional labeling and claims should make this information more accurate by taking into account children's specific nutritional necessities and of the different age groups when defining the guidelines to be complied with in children's products, including, for instance, the

RDA percentages. Thus, there should be specific regulation to this target and the claims wording stated in the legislation should also be adapted to children's cognitive stage. Although we did not prove significant effects on the attitude toward the product and purchase intention variables, by introducing this topic in children's educational programs for healthy eating, presenting nutrition claims as a reliable message and teaching how to use them when evaluating products and making choices, it could be possible to extend the previous effects on perceptions into the desired attitudinal and behavioral effects. Moreover, as our results showed that the nutrition claim in visual form is the one that has the most positive consistent impact in our variables, both for children and adults, in the future it may be necessary to develop legislation more focused on the use of visual elements in claims. Furthermore, as we saw on our literature review, it is imperative to achieve a consensus regarding the nutrient profiles to be established at a European level (OJEU, 2007) to avoid using claims to promote overall non-healthy products, which could lead these messages to mislead children and also adults. By turning this information more trustworthy and transparent, the consumers' judgment (especially adults) could be positively affected, leading them to rely more positively in these claims. For instance, it could also be important to inform consumers that claims are according to the legislation. Finally, the requirement of specific nutritional information on the label for all products (OJEU, 2011) is essential to protect more the consumer.

LIMITATIONS AND FUTURE RESEARCH

A first limitation of our study is the small sample because as we had to use five stimuli, the number of children per stimulus was not very large. Besides it comprised only one geographical area. Moreover, the online questionnaire sample was not representative of

the population and not as homogeneous with the children's parents as we desired. Another limitation was the fact that we gave children the time they wanted to look at the cereal card and thus, although we gave instructions to observe it as if they were shopping at the supermarket, it is not the same as a real in-store situation. The same is applicable to the online questionnaire to adults.

Future research should develop a qualitative research in order to directly gather children's experiences, perceptions and understandings (Greig et al., 2007) and also of adults about each stimulus tested, which would help to develop and explain deeper our results. Also, it could be interesting to promote a real in-store experiment to see if our findings are extensible to that context, and explore other categories of products. Moreover, future research could study the effect of the nutrition claims and the general claim assuring tastiness in a new or not well known brand. Furthermore, other types of claims, such as health claims, and other visual elements might be tested. Finally, it could be interesting to analyze if there is an impact of the culture on the healthy-not tasty association that could lead to different results in the variables.

REFERENCES

- AC Nielsen.** 2009. *Anuário Nielsen: Food*.
- Aisbitt, Bridget.** 2007. "Synthesis report No 5: Nutrition and Health Claims: the Facts on your Food." *British Nutrition Foundation*.
<http://www.eurofir.net/sites/default/files/EuroFIR%20synthesis%20reports/Synthesis%20Report%205%20Nutrition%20and%20health%20claims%20the%20facts%20on%20your%20food.pdf>
(accessed September 26, 2012).
- Aschemann, J., and U. Hamm.** 2009. "Preferences for Food with Nutrition and Health Claims in a Close-to-Realistic Choice Context." *Advances in Consumer Research*, 36: 819-820.
- Aschemann-Witzel, J., and U. Hamm.** 2010. "Do consumers prefer foods with nutrition and health claims? Results of a purchase simulation." *Journal of Marketing Communications*, 16(1-2): 47-58.
- Atkin, C. K.** 1978. "Observation of Parent-Child Interaction in Supermarket Decision-Making." *Journal of Marketing*, 42(4): 41-45.
- Balasubramanian, S. K., and C. Cole.** 2002. "Consumers' Search and Use of Nutrition Information: The Challenge and Promise of the Nutrition Labeling and Education Act." *Journal of Marketing*, 66(3): 112-127.
- Bone, P. F., and K. R. France.** 2001. "Package Graphics and Consumer Product Beliefs." *Journal of Business and Psychology*, 15(3): 467-489.

- Brennan, R., B. Czaenecka, S. Dahl, L. Eagle, and O. Mourouti.** 2008. "Regulation of Nutrition and Health Claims in Advertising." *Journal of Advertising Research*, 48(1): 57-70.
- Dias, M., and L. Agante.** 2011. "Can advergames boost children's healthier eating habits? A comparison between healthy and non-healthy food." *Journal of Consumer Behaviour*, 10(3): 152-160.
- Dixon, H. G., M. L. Scully, M. A. Wakefield, V. M. White, and D. A. Crawford.** 2007. "The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences." *Social Science & Medicine*, 65(7): 1311-1323.
- Feunekes, G. I. J., I. A. Gortemaker, A. A. Willems, R. Lion, and M. Kimmer.** 2008. "Front-of-pack nutrition labelling: Testing effectiveness of different nutrition labelling formats front-of-pack in four European countries." *Appetite*, 50: 57-70.
- Food Safety Authority of Ireland (FSAI).** 2012. Nutrition & Health Claims – Conditions for Use. [http://www.fsai.ie/science and health/nutrition and health claims/conditions for use.html](http://www.fsai.ie/science%20and%20health/nutrition%20and%20health%20claims/conditions%20for%20use.html) (accessed September 26, 2012).
- Ford, G. T., M. Hastak, A. Mirtra, and D. J. Ringold.** 1996. "Can Consumers Interpret Nutrition Information in the Presence of a Health Claim? A Laboratory Investigation." *Journal of Public Policy & Marketing*, 15(1): 16-27.
- Garde, A.** 2008. "Food Advertising and Obesity Prevention: What Role for the European Union?" *Journal of Consumer Policy*, 31(1): 25-44.
- Garretson, J. A., and S. Burton.** 2000. "Effects of Nutrition Facts Panel Values, Nutrition Claims, and Health Claims on Consumer Attitudes, Perceptions of Disease-Related Risks, and Trust." *Journal of Public Policy & Marketing*, 19(2): 213-227.
- Gaumer, C. J., and C. Arnone.** 2010. "Grocery Store Observation: Parent-Child Interaction in Family Purchases." *Journal of Food Products Marketing*, 16(1): 1-18.
- Ghoshal, T., P. Boatwright, and J. Cagan.** 2009. "Unwrapping the Good News: Packaging Pays, and "How"! The Role of Packaging in Influencing Product Valuation." *Advances in Consumer Research*, 8: 254-256.
- Golan, E., F. Kuchler, L. Mitchell, C. Greene, and A. Jessup.** 2001. "Economics of Food Labeling." *Journal of Consumer Policy*, 24(2): 117-184.
- Gorn, G. J., and M. E. Goldberg.** 1980. "Children's Responses to Repetitive Television Commercials." *Journal of Consumer Research*, 6(4): 421-424.
- Greig, A., J. Taylor, and T. MacKay.** 2007. *Doing Research with Children*. London: SAGE Publications.
- Harris, J. L., J. M. Thompson, M. B. Schwartz, and K. D. Brownell.** 2011. "Nutrition-related claims on children's cereals: what do they mean to parents and do they influence willingness to buy?" *Public Health Nutrition*, 14(12): 2207-2212.
- Harris, J. L., M. B. Schwartz, K. D. Brownell, V. Sarda, M. E. Weinberg, S. Speers, J. Thompson, A. Ustjanauskas, A. Cheyne, E. Bukofzer, L. Dorfman, and H. Byrnes-Encoh.** 2009. "Cereal FACTS: Evaluating the Nutrition Quality and Marketing of Children's Cereals." *Rudd Center for Food Policy and Obesity*.
[http://www.cerealfacts.org/media/Cereal FACTS Report 2009.pdf](http://www.cerealfacts.org/media/Cereal%20FACTS%20Report%202009.pdf) (accessed September 22, 2012).
- John, D. R.** 1999. "Consumer Socialization of Children: A Retrospective Look at Twenty-Five Years of Research." *Journal of Consumer Research*, 26(3): 183-213.
- John, D. R., and C. A. Cole.** 1986. "Age Differences in Information Processing: Understanding Deficits in Young and Elderly Consumers." *The Journal of Consumer Research*, 13(3): 297-315.
- Keller, S. B., M. Landry, J. Olson, A. M. Velliquette, S. Burton, and J. C. Andrews.** 1997. "The Effects of Nutrition Package Claims, Nutrition Facts Panels, and Motivation to Process Nutrition Information on Consumer Product Evaluations." *Journal of Public Policy & Marketing*, 16(2): 256-269.
- Kotler, P., V. Wong, J. Saunders, and G. Armstrong.** 2005. *Principles of Marketing: Fourth European Edition*. Harlow: Pearson Education Limited.

- Kozup, J. C., E. H. Creyer, and S. Burton.** 2003. "Making Healthful Food Choices: The Influence of Health Claims and Nutrition Information on Consumers' Evaluations of Packaged Food Products and Restaurant Menu Items." *Journal of Marketing*, 67(2): 19-34.
- Lefever, S., M. Dal, and Á. Matthíasdóttir.** 2007. "Online data collection in academic research: advantages and limitations." *British Journal of Educational Technology*, 38(4): 574-582.
- Levin, A. M., and I. P. Levin.** 2010. "Packaging of healthy and unhealthy food products for children and parents: The relative influence of licensed characters and brand names." *Journal of Consumer Behaviour*, 9(5): 393-402.
- Lobstein, T., and S. Dobb.** 2005. "Evidence of a possible link between obesogenic food advertising and child overweight." *Obesity Reviews*, 6(3): 203-208.
- Lytle, L. A., A. L. Eldridge, K. Kotz, J. Piper, S. Williams, and B. Kalina.** 1997. "Children's Interpretation of Nutrition Messages." *Journal of Nutrition Education*, 29(3): 128-136.
- Macklin, M. C.** 1994. "The Effects of an Advertising Retrieval Cue on Young Children's Memory and Brand Evaluations." *Psychology & Marketing*, 11(3): 291-311.
- Macklin, M. C.** 1996. "Preschoolers' Learning of Brand Names from Visual Cues." *Journal of Consumer Research*, 23(3): 251-261.
- McKinley, M. C., C. Lowis, P. J. Robson, J. M. W. Wallace, M. Morrissey, A. Moran, and M. B. E. Livingstone.** 2005. "It's good to talk: children's views on food and nutrition." *European Journal of Clinical Nutrition*, 59(4): 542-551.
- McNeal, J. U.** 1992. *Kids as Customers: A Handbook of Marketing to Children*. New York: Lexington Books.
- McNeal, J. U.** 2007. *On Becoming a Consumer: Development of Consumer Behavior Patterns in Childhood*. Oxford: Elsevier.
- McNeal, J. U., and M. F. Ji.** 2003. "Children's visual memory of packaging." *Journal of Consumer Marketing*, 20(5): 400-427.
- Miller, E. G., K. Seiders, M. Kenny, and M. E. Walsh.** 2011. "Children's use of on-package nutritional claim information." *Journal of Consumer Behaviour*, 10(3): 122-132.
- Neeley, S. M., and B. Petricone.** 2006. "Children's (Mis)understanding of Nutritional Information on Product Packages: Seeking Ways to Help Kids Make Healthier Food Choices." *Advances in Consumer Research*, 33(1): 556-557.
- Nestlé.** 2012. "The World's Leading Nutrition, Health and Wellness Company: Annual Report 2011." http://www.nestle.com/asset-library/Documents/Library/Documents/Annual_Reports/2011-Annual-Report-EN.pdf (accessed September 22, 2012).
- Official Journal of the European Communities (OJEC).** 1990. "Council Directive of 24 September 1990 on nutrition labelling for foodstuffs." <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1990:276:0040:0044:EN:PDF> (accessed September 26, 2012).
- Official Journal of the European Union (OJEU).** 2008. "Commission Directive 2008/100/EC of 28 October 2008 amending Council Directive 90/496/EEC on nutrition labelling for foodstuffs as regards recommended daily allowances, energy conversion factors and definitions." <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:285:0009:0012:EN:PDF> (accessed September 26, 2012).
- Official Journal of the European Union (OJEU).** 2007. "Corrigendum to Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods." <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:012:0003:0018:EN:PDF> (accessed September 22, 2012).
- Official Journal of the European Union (OJEU).** 2011. "Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011." <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:304:0018:0063:EN:PDF> (accessed September 26, 2012).

- Phelps, J. E., and M. G. Hoy.** 1996. "The Aad-Ab-PI Relationship in Children: The Impact of Brand Familiarity and Measurement Timing." *Psychology & Marketing*, 13(1): 77-105.
- Piaget, J., and B. Inhelder.** 1972. *The Psychology of the Child*. Basic Books.
- Pires, C., and L. Agante.** 2011. "Encouraging children to eat more healthily: The influence of packaging." *Journal of Consumer Behaviour*, 10(3): 161-168.
- Podsakoff, P. M., S. B. MacKenzie, and J. Lee.** 2003. "Common Method Biases in Behavioural Research: A Critical Review of the Literature and Recommended Remedies." *Journal of Applied Psychology*, 88(5): 879-903.
- PORDATA – Base de dados Portugal Contemporâneo.** 2012. População residente com 15 e mais anos: total e por nível de escolaridade completo mais elevado. <http://www.pordata.pt/Portugal/Populacao+residente+com+15+e+mais+anos+total+e+por+nivel+de+escolaridade+completo+mais+elevado-2101> (accessed November 19, 2012).
- Prendergast, G., and P. Leyland.** 1996. "Packaging, marketing, logistics and the environment: are there trade-offs?" *International Journal of Physical Distribution & Logistics Management*, 26(6): 60-72.
- Raghunathan, R., R. W. Naylor, and W. D. Hoyer.** 2006. "The Unhealthy = Tasty Intuition and Its Effects on Taste Inferences, Enjoyment, and Choice of Food Products." *Journal of Marketing*, 70(4): 170-184.
- Roe, B., A. S. Levy, and B. M. Derby.** 1999. "The Impact of Health Claims on Consumer Search and Product Evaluation Outcomes: Results from FDA Experimental Data." *Journal of Public Policy & Marketing*, 18(1): 89-105.
- Roedder, D. L.** 1981. "Age Differences in Children's Responses to Television Advertising: An Information-Processing Approach." *Journal of Consumer Research*, 8(2): 144-153.
- Rossiter, J. R.** 1976. "Visual and Verbal Memory in Children's Product Information Utilization." *Advances in Consumer Research*, 3: 523-527.
- Sensbach, P. R.** 2000. "Don't kid around with kid packaging." *Marketing News*, 34(24): 14.
- Silayoi, P., and M. Speece.** 2007. "The importance of packaging attributes: a conjoint analysis approach." *European Journal of Marketing*, 41(11): 1495-1517.
- Stranieri, S., L. Baldi, and A. Banterle.** 2010. "Do Nutrition Claims Matter to Consumers? An Empirical Analysis Considering European Requirements." *Journal of Agricultural Economics*, 61(1): 15-33.
- Szykman, L. R., P. N. Bloom, and A. S. Levy.** 1997. "A Proposed Model of the Use of Package Claims and Nutrition Labels." *Journal of Public Policy & Marketing*, 16(2): 228-241.
- Underwood, R. L., and N. M. Klein.** 2002. "Packaging as Brand Communication: Effects of Product Pictures on Consumer Responses to the Package and Brand." *Journal of Marketing Theory & Practice*, 10(4): 58-68.
- Underwood, R. L., N. M. Klein, and R. R. Burke.** 2001. "Packaging communication: attentional effects of product imagery." *Journal of Product & Brand Management*, 10(7): 403-422.
- UNICEF Evaluation Office.** 2002. *Children Participating in Research, Monitoring and Evaluation (M&E) – Ethics and Your Responsibilities as a Manager*. Evaluation Technical Notes, No. 1: 1-11. New York: UNICEF.
- Unilever.** 2012. "Unilever Sustainable Living Plan - Progress Report 2011." <http://www.unilever.com/images/uslp-Unilever Sustainable Living Plan Progress Report 2011 tcm13-284779.pdf> (accessed September 22, 2012).
- Valkenburg, P. M., and J. Cantor.** 2001. "The development of a child into a consumer." *Journal of Applied Developmental Psychology*, 22(1): 61-72.
- World Health Organization (WHO).** 2007. "The challenge of obesity in the WHO European Region and the strategies for response." http://www.euro.who.int/data/assets/pdf_file/0008/98243/E89858.pdf (accessed September 20, 2012).
- World Health Organization (WHO).** 2012. Media centre – Obesity and overweight. <http://www.who.int/mediacentre/factsheets/fs311/en/index.html> (accessed September 20, 2012).

APPENDICES

APPENDIX A: EXAMPLE OF A STIMULUS - VISUAL NUTRITION CLAIM AND GENERAL CLAIM ASSURING TASTINESS



Note: The nutrition claim (“Contém Cálcio e Vitamina C”) and the general claim assuring tastiness (“Delicioso Sabor”) were added to the front panel of the package existent in the marketplace.